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THE

OPHTHALMIC REVIEW,

A

MONTHLY RECORD

OF

OPHTHALMIC SCIENCE.

EDITED BY

KARL GROSSMANN, M.D., LIVERPOOL,

AND

PRIESTLEY SMITH, BIRMINGHAM,

With the assistance of Co-operators at home and abroad.

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WITH THE ASSISTANCE OF CO-OPERATORS AT HOME AND ABROAD.

This periodical, commencing November, 1881, will present critical notices and abstract current Ophthalmic Literature, British and Foreign, and will provide a channel for the pu cation of short original articles.

The first two numbers, now ready, contain contributions by Mr. Jonathan Hutchin Edward Nettleship, and other distinguished Ophthalmists.

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Volume I will comprise the fourteen numbers from November, 1881, to December, 1 which will be furnished for the regular subscription price of $2.00, or upon receipt of $ both of the above Journals will be sent, postage prepaid.

INTRODUCTORY.

LABOURERS in the field of ophthalmology grow more numerous year by year, for, not only does this branch of our art attract an increasing number of practitioners, but the value of ophthalmic science to the science of medicine as a whole gains, year by year, a wider and fuller recognition. As the field of work enlarges there comes inevitably to each one of the workers therein an increasing difficulty in keeping himself acquainted with the progress made by others.

The Ophthalmological Society of the United Kingdom, established with signal success during the last twelve months, brings to a focus the best work of British ophthalmogists. But something still remains to be done. In most of the countries of Europe, and in America, journals devoted to ophthalmic medicine and surgery have been established with conspicuous advantage to the science with which they deal. In England we have none. While our leading ophthalmic hospital has for many years past recorded its work in a series of reports which are of the highest value, countless articles and abstracts from other sources are annually scattered throughout the whole of our medical literature, and are practically buried in it. There is little doubt that an ophthalmic periodical is at present really needed.

The *Ophthalmic Review*, appearing at the commencement of every month, will present, within the space of a few pages, critical notices and abstracts of all important contributions to current ophthalmic literature, British and Foreign, and will, at the same time, afford a channel for the prompt publication of short original papers.

The Editors are assisted by able co-operators in this country and on the continent, and they venture to appeal with confidence, on behalf of their undertaking, to all who are interested in the advance of ophthalmology.

ON RETINITIS PIGMENTOSA AND ALLIED AFFECTIONS, AS ILLUSTRATING THE LAWS OF HEREDITY,

By Jonathan Hutchinson, F.R.C.S.,

Consulting Surgeon to Moorfields Hospital, and Professor of Surgery and Pathology in the Royal College of Surgeons.

The following Paper is part of a Lecture delivered at the College of Surgeons, last summer. The fact that it was addressed to a general audience of Surgeons and not to Ophthalmologists, must excuse the introduction of some explanatory expressions, which would under other circumstances have been unnecessary.

Retinitis pigmentosa is a disease of the utmost interest to the student of heredity. Its course, symptoms, pathological anatomy, and to some extent its causes are now well understood. Many years ago a well dressed man who looked in excellent health, came to my desk in the out-patient room, at Moorfields, and in a somewhat excited manner declared "I am going blind Sir! you can do nothing for me I know! It is in the family, and has been for centuries, and at the present time I know of more than thirty who are either blind or on the way to it. When once it begins it always goes on; still I should be glad if you would look at my eyes." I did so and found, as I expected, that he was the subject of retinitis pigmentosa. Many similar narratives might be given in which the liability to this disease shewing itself in a few members of each successive generation, and not attended by any other failure of the nervous system, or of the general health, has persisted literally through several centuries, exactly as we have seen to be the case in hæmophilia, ichthyosis, and colour-blindness. Nyctalopia—the inability to see well by artificial light—is its pathognomonic symptom and always the first to occur, and when this is recorded to have been followed by slowly progressive failure of sight we may be sure of our diagnosis. Guided by this fact we may feel confident that the family history recorded in 1838, by M. Florent Cunier, and subsequently quoted by most writers on heredity, although occurring before

the days of the ophthalmoscope, undoubtedly belongs to this disease. In a pamphlet published in Ghent, in 1838, Cunier gives the history of a family in whom night-blindness had been known to prevail during two centuries. The disease had been spread over a large district, but was confined to the descendents of one ancestor. In the greater number of cases it was inherited from the father, and there existed no example of its having ever befallen a member of this family where both parents were free,

Although the exact diagnosis was not possible before the introduction of the ophthalmoscope, yet the clinical features of retinitis pigmentosa were well known to the older observers. Dr. Joseph Adams writes, "when the disposition is hereditary, the children are born with perfect organs, but usually about the age of puberty, a dulness of the sense is discovered which gradually increases for the remainder of life, or till the entire loss of the faculty." He quotes from the *Baltimore Medical and Physical Register* of 1809, the case of a family of the Le Comptes, who "saw clearly till about the age of 16 or 18; at that age, some of them without any apparent cause became dim-sighted, and grew gradually more so until they became dark; such has been the case for three generations with a certain number, those who escaped the critical age remaining free."

Retinitis pigmentosa has been but very rarely proved to be present at birth. Its most characteristic symptoms begin in childhood. It assumes a troublesome form in adult age, slowly advancing to almost total blindness at the age of forty or fifty, or it may be sooner. There are very few exceptions to the statement that if it comes at all it begins in childhood, and as its earliest stages are sure to be overlooked we may hold it for almost certain that it is usually present either at birth or very soon after. Thus it differs chiefly from deaf-mutism in that it progresses very slowly, and does not absolutely extinguish the sense affected until late in life. That the two are closely connected, and very probably depend upon structural changes similar in their nature, is almost certain, for they are met with in connexion with the same class of causes, transmitted under the same laws, and often present together in the same individual. In our aylums for the deaf and dumb there are always to

be found plenty of cases of retinitis pigmentosa. It is quite possible that further research may prove that there is a form of hereditary tendency to nerve deafness which runs its course in more exact parallel with retinitis pigmentosa, that is, far more slowly than the ordinary form which results in deaf-mutism. Dr Adams mentions that the family of a Mr. B. of P. is liable to deafness, not congenital, but coming on at about the age of 16 or 18, and gradually increasing. Those who escape at the critical age, do not suffer afterwards. It has occurred, it is implied, in several generations, but no details are given.

Of the pathology of this disease we know that it consists in a slow degeneration of the retinal and choroidal structure attended by conspicuous and very peculiar pigmentation of the former. A zone of stellate accumulations of black pigment in the peripheral part of the fundus is its first objective symptom. This may increase until a large part of the retina is almost black, and simultaneously the retinal vessels shrink to mere lines and the optic disc becomes pale and waxy. Nothing arrests the progress of the degeneration when once it has set in, and as I have said, it always begins in very early life. As I have also already said it is hereditary in a most remarkable degree, and when inherited it keeps its type in a very definite manner. Probably it but rarely originates *de novo* excepting under conditions which I shall advert to directly, which are likely to favour its development in several members of the same family. Thus what Professor Wilson said of colour-blindness, and what I have ventured to assert of ichthyosis, that when you identify a case, you may feel quite sure that its subject has one or more relations in like condition, is true also of it. The laws which regulate its descent, do not, so far as I am aware, differ materially from those which we have examined in reference to various other maladies and defects, and I feel sure that you will therefore gladly excuse the producton of evidence.

There are, however, one or two points upon which I must say a few words:—the supposed excessive prevalence of the malady amongst Jews; its possible production by consanguineous marriages; and its alliance with other diseases of the nervous system. The first suggestions on

the two former points we owe, I believe, to Dr. Liebreich, who published the results of his laborious investigations respecting them in 1861. Briefly, I may say that Liebreich found, as the result of his Berlin experience, that nearly one half of his cases occurred in the descendents of cousins, and the number of which the subjects were Jews, was exceedingly large in proportion to the relative number of that race to other residents. He also observed by the ophthalmoscope, what our own Dr. Mackenzie had long previously noticed as the result of *post mortem* examinations, that a deaf-mutism and a pigmented condition of the retina occurred together. Enquiry on this latter point further shewed that when in any family both these conditions were occasionally found, they were always met with in the same person, and that those who escaped one, escaped also the other. Liebreich's statistics on these points were confirmed by examination of such facts as had then occurred in the practice of Von Graefe, and I have the authority of their author for stating that his more varied experience during the past twenty years has not led him to modify any of his conclusions. As regards the possible influence of consanguineous marriages, he estimated that there were in Berlin, amongst the Catholic population in which such marriages are forbidden, one deaf mute in 3,000, amongst Protestants who neither forbid nor encourage, one in 2,000, and amongst Jews who are supposed to encourage them, one in 400. These startling statistics, although perhaps pointing to the truth, must not, I feel sure, be held to express it. The total numbers are far too small to admit of safe inferences, and other observations lead us to claim a very large abatement from their lesson. Some of Liebreich's facts are of much interest. Thus he found that of those who were the subjects of deaf-mutism and retinitis together, five were brothers and sisters; four were, in another case, brothers and sisters; two were a brother and sister; and there were single examples from different families. The fact of a family-prevalence is here strikingly shewn. In the case in which four brothers and sisters suffered, they were the children of two mothers who were sisters, (three of one and one of the other), and their father had by a former wife two children, who were not affected. Here there

was no marriage of consanguinity, and the suggestion of some hereditary tendency on the mother's side is obvious.

That retinitis pigmentosa is one of the maladies which clings most tenaciously to certain families, no one can doubt, and thus it may easily come to prevail in certain communities as the result of intermarriage as distinct from marriages of consanguinity. It becomes necessary in every case in which it is found in the children resulting from a consanguineous marriage, before we assume that such marriage is the cause, to enquire whether there may not have been at work an inherited tendency to the malady. To this point I have myself paid especial attention in taking notes of cases, and I have therefore some not unimportant evidence to offer. The disease is a rare one, and I find in my note books only twenty-three histories of individuals or families affected by it. In no fewer than eight of these there had been a consanguineous marriage and in not one of these eight was evidence forth coming that the disease had been known in the family before. Three of these patients were either partially or wholly deaf. In four of the eight only one individual suffered. Out of the whole number (23) the disease affected more than one member of the family in ten instances, in two of which three children suffered, and in eight two. In ten cases there was no history of either hereditary tendency or consanguineous marriage, and in five of them two members of the family suffered. The negation of family history, we must always remember, by no means proves its absence. Two of my cases in which there had been a consanguineous marriage, are of much interest, because I had special advantages in establishing the absence of family history. In each of these I saw the grandmother of the patient and got the facts as to former generations more clearly than such facts are usually obtainable. One of these occurred in a family who were members of the Society of Friends, and the relationship was what may be called double-first cousinship. Cousinship occurs of course if the fathers are brothers, or the mothers sisters, or the father in one marriage the brother of the mother in the other. In this instance the fathers were brothers and the mothers sisters. A son and a daughter of these marriages became man

and wife, and of their offspring two at least are now the subjects of advancing retinitis pigmentosa. Two interesting cases have quite recently occurred at Moorfields, in which several members of a family, the offspring of first cousins, were affected by retinitis. I am indebted to Mr. Webster Fox for the notes of these, but have not time to quote them in more detail. They are, I believe, but examples of that with which all ophthalmic surgeons who have interested themselves in this matter, are familiar. There can, I think, be no reasonable doubt as to the truth, explain it how we may, that consanguineous marriages are prone to produce this malady, and the facts are, I believe, equally strong in respect to deaf-mutism and idiocy. I believe that I have never myself seen a Jew the subject of retinitis pigmentosa, but this is probably a matter of mere coincidence, and Liebreich's opinion as to its excessive prevalence in that race is most likely correct.

[*To be continued.*]

TH. LEBER, (Goettingen). **The origin of sympathetic affections of the eye.** (*Von Graefe's Archiv*, xxvii., 1., 1881.)

Leber maintains that the theory which regards the ciliary nerves as the channels by means of which sympathetic inflammation is lighted up must be abandoned, and that the older view of Mackenzie, who looked upon the optic nerve as the conductor, must be re-instated. He supports this view by the following facts and considerations :— Anatomical examination of the optic nerves of 9 eyes, removed subsequent to the development of sympathetic inflammation in the fellow eyes, showed a distinct hyperplasia of the connective tissue between the sheaths, with proliferation of the endothelium. Clinically, it would seem that the affection of the second eye begins, as a rule, in the uveal tract, and not, as one would expect, in the optic disc, and this Leber admits, is apparently a difficulty to the theory of conduction by the optic nerve ; he believes, however, that the affection of the disc is always present, though not always conspicuous, being in some cases recognisable *in spite of* the obscured media, in others unrecognisable *because of* the obscured media, and that the inflammation when once it has reached the eye spreads very quickly over the uveal tract and vitreous body.

Leber argues further, that the symptoms of sympathetic inflammation coincide closely with those severe forms of iritis and iridocyclitis which have a parasitic origin; and that at least the typical form of irido-choroiditis is caused by infection. If microphytes be the cause of the inflammation in the second eye, they must be concerned in that of the first eye also. Leber believes that this is certainly the case, and that further experience will prove that genuine sympathetic inflammation comes on only after septic inflammation of the first affected eye; the possibility of an external septic inflammation of the first eye is nearly always present. He states that he has repeatedly succeeded in finding low organisms in eyes enucleated for fear of sympathetic inflammation. This supposition of an infective origin of sympathetic inflammation will, he urges, explain many otherwise obscure clinical facts, and if it be true, the conduction of the mischief can only be effected along the optic nerve. We would note in passing, however, that assuming Leber's premise to be true, Snellen's explanation which places the conduction in the lymphatic vessels, and Samelsohn's which attributes it to the adventitia of the blood vessels, may perhaps be qually justified.

A rigid distinction must be drawn between sympathetic *inflammation*, the condition to which Leber's theory applies, and sympathetic *neurosis* or *irritation*, which manifests itself by photophobia, increased lachrymation, asthenopia, and disturbance of accommodation; the latter disease must be attributed, as has been generally done, to an irritation of ciliary nerves. It is brought to an end in almost all cases by removal of the first-affected eye, and this fact constitutes a further important difference between sympathetic inflammation and sympathetic neurosis.

Leber adds a case in which sympathetic inflammation came on more than two years after optico-ciliary-neurotomy had been performed on the first-affected eye, which leads him to reject this operation altogether.

EDWARD NETTLESHIP, (London). Three cases of sympathetic ophthalmitis setting in three weeks after excision of the other eye; with abstracts of cases already published. *(Transactions of Clinical Society of Lond. Vol.* xiii.. 1880.*)*

The timely excision of a disorganised eye is usually so effective a safeguard against the occurrence of sympathetic

inflammation in its fellow, and patients are so frequently induced to submit to the operation by representations of the immunity which it confers, that every instance in which the rule fails is manifestly of high importance. We cannot hope to explain these exceptional cases of sympathetic mischief, setting in subsequently to excision of the first-affected eye, until the mode of transmission of sympathetic ophthalmitis in general is definitely ascertained, but every such exceptional occurrence should certainly be recorded. In view of the theory of infection through the optic nerve, recently advanced by Leber (*vide* preceding abstract) and of certain points to which Nettleship here draws attention, we would point out that special importance is to be attached to an ophthalmoscopic examination of the disc of the eye which is presumably sound, at the time of the excision of its fellow.

Even from the small number of cases which he has been able to collate, Nettleship deduces some important suggestions; they are as follows:—

1.—There can be no doubt that the disease of the second eye was sympathetic.

2.—There is a strong presumption that the sympathetic disease was caused by the damaged eyeball, the morbid process having, before excision, travelled so far towards the healthy eye as to be out of reach, and that it was not set up by the operation. The grounds for this belief are these:—in some cases the sympathetic inflammation sets in within a few days after excision, whereas ordinarily it scarcely ever begins sooner than about two weeks after an injury; if excision could cause it, we might expect to meet with it sometimes a very long time after the operation, which we never do; if it were caused by the operation of excision, it would presumably be as severe as though it were induced in the ordinary way, which appears not to be the case (*vide* next paragraph); nothing unusual was noted in the healing of the wound after excision in these cases; in every case the first-affected eye was in a condition likely to cause sympathetic mischief.

3—Amongst eight cases of which the history is complete, recovery (usually perfect) took place in six, a much higher proportion than in ordinary cases.

4.—The comparative mildness of the disease when it *follows* excision, seems to show that the removal of the damaged eye, even after sympathetic ophthalmitis is declared in the other, may not be so useless as it is often held to be, and that the improvement in the sympathising

eye which sometimes follows this proceeding, may not be a mere coincidence, but may be really due to the removal of a persistently acting cause.

5.—In several of the cases the sympathetic disease began apparently in an unusual manner, viz: as a neuro-retinitis; it is not probable that this condition originated in the optic nerve, but rather that it was communicated from the choroid, since the anterior parts of the uveal tract participated to a marked extent in the inflammation.

ABSTRACT OF CASES:—

Case I.—Patient a pale, very nervous, phthisical lad of 20. Removal of a shrunken fluid cataract from an unsound and irritable eye; loss of vitreous; severe intraocular hemorrhage 48 hours later. Enucleation 10 days after extraction. Sympathetic inflammation of other eye with neuro-retinitis, irido-cyclitis, and glaucoma, beginning 22 days after enucleation. Eye lost.

Case II.—Patient, a carpenter, aged 67. Wound or rupture of sclera close to cornea, united by suture immediately. Enucleation 19 days after accident, no sympathetic symptoms being present. Serous iritis, opacities of vitreous, and detachment of retina setting in 23 days after enucleation. Good recovery, with subsidence of retinal detachment. Toxic symptoms from use of duboisine drops.

Case III.—(Under care of Mr. Cowell). Patient, a boy aged 11. Wound of cornea by piece of wood, with adhesion of iris. Purulent cyclitis. Excision, 24 days after accident. Severe iritis setting in 25 days after excision. Recovery with good sight.

Case IV.—(quoted from Nagel's Jahresbericht, 1873, p. 316)—Patient, a woman aged 35; left eye lost by small-pox, staphylomatous and glaucomatous; duration of this condition not stated; no sympathetic spmptoms; excision. Photopsia and dimness of vision, with haziness of retina around disc setting in five days after excision; disappearance of haziness of retina and recovery of normal vision, under blood-letting and mercury; several months later, cyclitis with increased tension, passing after several remissions into a decidedly glaucomatous state; iridectomy with complete success.

Case V.—(quoted from Colsmann, Berlin. Klin. Wochenschr. 1877, No. 12)—Patient, a man aged 35; perforating wound of centre of right cornea and lens; purulent kerato-iritis followed by swelling of orbital connective tissue and persistent pain; excision six weeks after accident. A few days after excision localised pale conjunctival œdema at inner part of left eye with sight down to 15/100, but no ophthalmoscopic changes; four days later neuro-retinitis, yellow spot region being chiefly affected, with contraction of visual field. Vigorous anti-phlogistic and mercurial treatment; gradual recovery. Two years after onset of attack eye remained well.

Case VI.—(quoted from Colsmann, l.c.)—Excision for sclero-corneal wound, no sign of sympathetic mischief being present; two months later complaints of photopsia without defect of vision; six months later neuro-retinitis, with general haze of retina and deterioration of vision. Final condition unknown. (The case is so incomplete, and the interval between excision and the occurence of the supposed sympathetic disease so long, that it must be received with caution.

Case VII.—(quoted from Pagenstecher and Genth, Atlas of the Path. Anat. of Eyeball. pl. xxxviii., Fig. 12, 1875).—Patient aged 14. Large wound of left cornea and sclerotic, with prolapse of iris and traumatic cataract by explosion of glass bottle; immediate excision refused; wound healed, but pain and congestion continued; excision 27 days after accident,

the eye having begun to shrink ; no trace of sympathetic mischief at time of excision, and six days later the eye was perfectly natural as to sight, accommodation and condition of pupil ; excision wound healed well ; iris on ninth day after excision gradually assuming all the characters of a true sympathetic iridochoroiditis ; treatment powerless ; active symptoms still present eight months after onset.

Case viii.—(quoted from H. Schmidt, Klin. Monatsbl. für Augenheilkunde, 1874, p. 179).—Perforating wound at outer edge of cornea by a file, inclusion of iris, wound of lens, intrusion of an eyelash into anterior chamber ; excision four weeks after injury on account of severe ciliary pain, the other eye being entirely free from symptoms ; excision wound healed as usual ; on fourth day after excision congestion of other eye, soon followed by iritis, sight remaining normal ; energetic treatment by atropine and mercury followed by complete cure.

Case ix.—(quoted from Brudenell Carter ; reported by McHardy, St. George's Hosp. Reports ix. pp. 496, 505, 508—1878).—Patient an intemperate carpenter, aged 35 ; blow with fist on right eye ; rupture of sclera near outer-upper margin of cornea, dislocation of lens beneath conjunctiva, anterior chamber filled with blood ; no perception of light. Lens removed by division of conjunctiva ; excision 15 days after accident, no sympathetic symptoms being present. Sympathetic irritation began probably about six days after excision ; slight conjunctival irritation and watering, but vision normal, and iris bright and active ; during three or four weeks the congestion varied, but was never severe, and was treated as conjunctivitis ; during this time patient was drinking. 38 days after excision, and 53 after the accident, photophobia and considerable ciliary congestion, but pupil dilated widely with atropine ; three days later iritis and opacity of vitreous, with wide dull ciliary congestion, and vision equal to perception of light. Calomel vapour baths to gentle salivation (nineteen in first nineteen days, ten in next three weeks), occasional artificial leech ; no improvement for first month, then rapid complete recovery ; discharged with normal vision two months after onset of iritis ; four months after vision remained 20/20.

Lloyd Owen (Birmingham). Injury to one eye: enucleation: sympathetic iritis in the other setting in five days afterwards. *(Reported by Dr. Wood-White. —Brit. Med. Journal*, 1881, i., *p.* 596.*)*

The following case favours the supposition noted in the preceding abstract, that sympathetic ophthalmitis setting in *after* excision of the first-affected eye is more prone to recovery, or more amenable to treatment, than the same disease occurring in the ordinary way.

A healthy girl, aged 16, was injured in the left eye by a fork. When seen 15 days later, there was a small sclero-corneal wound at the outer extremity of the horizontal meridian, in which the iris was incarcerated. The capsule was wounded and the swollen opaque lens-matter was pressing forward ; the globe generally was injected and painful. Extraction was performed ; pain continued ; the tension fell, and vision was not regained ; enucleation was performed for the relief of pain on the 29th day after the accident, and the 14th after the extractfon. At the time of enucleation

vision of the right eye was perfectly good, and there was no evidence or suspicion of sympathetic mischief. Five days later iritis set in, with soft adhesions to the lens-capsule, ciliary redness, cloudiness of aqueous humour, and reduction of vision to fingers at 3 feet. Careful bandaging, hourly instillations of atropia, three leeches to the temple, inunction of mercurial ointment, and quinine internally were employed. The pupil dilated fully after a few instillations, the pain and iritis disappeared in ten days, photophobia only remaining. The mercury was discontinued on the 14th day, only the slightest constitutional effect having been produced. The eye was kept in modified light for some weeks longer. On examination 15 weeks after the commencement of the iritis, vision equalled 20/20 and the iris was active, bright, and free from adhesions.

J. J. Chisolm (Baltimore). **Sympathetic amblyopia, rapidly destroying sight; prompt relief by neurotomy of the optic and ciliary nerves of the lost eye.** *(New York Medical Journal*, 1880 *Vol.* xxxi., *p.* 267.*)*

An amblyopia amounting almost to blindness, and not accompanied by any visible retinal change, is an extremely rare occurrence as the result of sympathetic influence. In Chisolm's case, the rapid recovery of sight which followed division of the nerves of the first-affected eye, renders it in the highest degree probable that the amblyopia was truly of sympathetic origin. Sympathetic retinal amblyopia may depend, apparently, upon two distinct conditions, viz.: *(a)* upon a retinitis, visible with the ophthalmoscope, which arises secondarily to changes in the uveal tract, and *(b)* upon a direct sympathetic influence on the retina, optic nerve, or visual centres, not accompanied by visible changes in the eye, (*vide* Leber, Graefe-Saemisch Handbuch, Vol. v., p. 975). Among the cases collated by Nettleship, already noticed,(page 10) are several instances of the former variety; the following case appears to be a well marked instance of the latter.

A farmer, aged 35, lost his right eye by suppurative inflammation; the cornea gave way, hernia of the iris occurred, and the eye was left with a very large central corneal leucoma, showing a very small circle of iris and no pupil; it acquired a squint of 5 degrees and lost all useful sight. Six years later the lost eye being neither painful nor injected, the sound eye became affected; light did not annoy, but small objects could not be distinctly seen. When examined, the patient could not read Jaeger xx however close to the eye, while three weeks previously he had read fine print without trouble. There was no pain, photophobia, lachrymation, or injection; ophthalmoscopically nothing abnormal. The patient did not drink ardent spirits or use tobacco. At the end of two weeks, during which time he took strychnine in increasing and full doses, he was so blind that he could not count fingers at four inches from the face; in every other respect he was in good condition. The ophthalmoscope still revealed nothing. Section of the optic and ciliary nerves was then performed; the tendon of the internal rectus was divided and left unattached in order to

correct the squint; all medication was stopped. The day after the operation the patient thought his sight decidedly stronger; at the end of the first week he could read to No. xvi of the test types; at the end of the second week vision was entirely restored. V=20/20.

R. Deutschmann, (Goettingen). **Miliary tuberculosis of the brain and its membranes, and the connection of this disease with affections of the eye. An experimental study.** *(Von Graefe's Archiv*, xxvii., 1, 1881*).*

By injecting aseptic tuberculous human pus into the cranial cavity of rabbits four weeks old, Deutschmann has succeeded in obtaining miliary tuberculosis of the dura and pia mater and of the substance of the brain. Three weeks after this inoculation the animals experimented on get double-sided papillitis, which may either pass off without leaving any traces, or develope into typical choked disc, ("Stauungspapille,") and this latter condition may terminate by transition into atrophy of the optic nerve; ultimately the process may lead, by way of further infection, to tuberculosis of the vitreous body and of the choroid. The cause of the ophthalmoscopic changes was proved, by *post mortem* examination, to be, in all cases, a tuberculous affection of the sheaths of the optic nerves, derived from the inoculated tuberculosis of the brain and its membranes, not by immediate propagation *in continuo*, but by metastasis. For as the first tubercles deposited in the sheaths were found at the entrance of the optic nerve into the eye, *and only there*, it would seem, that the germs must have passed from the tuberculous foci in the brain into the subvaginal space, and have been carried along this space, meeting with no resistance until they were stopped at the scleral foramen, where they then set up the infective process. The infection was found to have taken place sometimes on the inner, sometimes on the outer sheath.

The animals seldom died from this brain-tuberculosis, in some instances the whole affection passed off leaving more or less large defects in the brain. Deutschmann found also in a child, who died from tuberclar meningitis after 23 days illness, small round nodules in the inner sheath of the optic nerve, which he believed to be tubercles. The well marked ophthalmoscopic changes observed during life and the pathological alterations discovered after death, in the case of the rabbits, are both alike unknown in the human subject; the explanation of this fact is to be found, probably, in the

circumstance, that in man tuberculosis of the brain causes death too early to allow of the development of the ocular changes.

F. Poncet (Cluny). Pterygium. (*Archives d' Ophthalmologie, November* 1881).

An explanation of the origin of the true pterygium and of its persistent and steady growth towards the centre of the cornea, has long been sought without complete success. An observation made by Poncet, throws new light on the matter; if confirmed by further research, it will not only afford the explanation which is wanted, but will, it may be hoped, lead to better results in the treatment of the affection. A soldier, aged 24, the subject of a single typical pterygium of the right eye, died in hospital of other disorders. During a long stay in hospital his eye had presented no marked injection, and no corneal inflammation; the pterygium was broad at the base, pale, and had already advanced half-way to the centre of the cornea. Immediately after death the eye was treated with an alcoholic collyrium to prevent decomposition; later it was excised and microscopically examined. Sections taken from the pterygium in a meridional direction, and including portions of the subjacent cornea and sclera, showed the presence of a mass of vibrios situated between the corneal tissue and the overlying conjunctival prolongation, separating the fibres and penetrating between the laminæ of the cornea. It appears probable that these parasites advance into the cornea in a direction corresponding with the distribution of the corneal lymphatics, and thus invade a triangular-shaped area, the apex of which is directed towards the centre of the cornea. Poncet agrees with previous writers in believing that the starting point of a true pterygium is invariably some ulceration at, or near, the margin of the cornea, which destroys the epithelium and the membrane of Bowman, and to which the adjacent conjunctiva becomes attached; the further extension of the epithelial growth across the clear cornea, and its frequent recurrence after removal, which have hitherto found no satisfactory explanation, he attributes to the persistent chronic irritation kept up by the advance of the included parasites. From this standpoint he argues, that if there is any operation which demands antiseptic dressing, it is that for the removal of a pterygium. The first indication, as regards treatment, is to free the cornea completely from the micro-organisms. It is better to freely remove the superficial layers of the cornea, a transparent cicatrix in which is under no circumstances to

be hoped for, than to leave it liable to fresh "subterraneous" incursions and a recurrence of the pterygium. As regards the base of the growth which is seated on the ocular conjunctiva, a free removal is also desirable, including the altered epithelium on each side of the raised portion, and care must be taken that none but healthy conjunctiva is employed to cover the gap thus made. Applications and dressings of boracic acid or of weak carbolic acid are also to be employed. The paper contains a full discussion of the views which have been put forward by other writers on pterygium, as well as a very minute description of the changes revealed by the microscope in the case in question. The latter are illustrated by coloured plates. Attention having been drawn to this interesting observation, it is to be hoped that further examinations may shortly determine whether Poncet's theory is correct, and whether the suggested treatment, based upon it, will successfully combat the affection.

J. Ogneff (Moscow). **Histogenesis of the Retina.** *(Centralblatt f. d. med. Wissensch., Aug. 27th, 1881).*

Ogneff refutes the opinion of Loewe (Archiv f. microscop. Anat. xxv.4,1879) that the development of the retina in mammals takes place in a way opposite to that which is found in birds and batrachians. He examined, especially, rabbit-embryos. In the earliest stage the retina consists of spindlecells with filiform processes, which pass through the whole thickness of the retina. No special *membrana limitans externa* or *interna* can be recognised. The inner cells then split, grow, and send out ramified processes, mainly to the outer side. The inner processes show a flexion and appear, according to Ogneff, to be the origin of the nerve fibres, while some of their inner terminations appear to originate the radial fibres of Mueller. The next change is that a narrow stripe of unequal width appears between the nerves and spindlecells — this is the foundation of the molecular layer. After this, only a more detailed development of these layers takes place, especially of the molecular and of the nervous layers. The last differentiation is that of the two granular layers and the rods; these latter are formed of that part of the processes of the outer cells which is situated beyond the limitary line, and here the author entirely disagrees with the views of Loewe. The molecular layer, shortly before this differentiation takes place, divides, and developes into the smaller outer, and the larger inner, granular layers. Ogneff promises fuller communications on this subject; he believes that Loewe was misled by the method in which he prepared his specimens.

Ophthalmological Society of Great Britain.—

Thursday, October 13th, 1881.

William Bowman, F.R.S., President, in the Chair.

The President, in opening the proceedings of the session, referred to the important discussions held in the Ophthalmological section of the recent International Medical Congress. He recalled to the minds of the members the recommendations laid down for legislation in connection with colour-blindness, and the protest made against unnecessary restrictions upon experimentation on living animals. He announced that the first volume of the *Transactions of the Society* was that day published.

Apparent movements of objects during involuntary movement of the eyes.—Dr. Hughlings Jackson spoke of a case of auditory vertigo (see *Brain*, April, 1879), in which the eyes made involuntary jerking movements towards the right, and in which, according to the statement of the patient, objects appeared to him to move *in the same direction*—he indicating the direction and the jerky character of the movement by jerking his hand from left to right. This was an apparent contradiction to the law that, in every deviation of the eye, the cornea and the false image deviate in opposite directions. Dr. Jackson propounded the following quesitons:—Is it true that, when the eyes jerk to the right, the images appear displaced to the right also? Do the apparent displacements occur synchronously with the jerks? A correspondent had suggested to him that the apparent movements of the object occurred, not during the jerks to the right, but during the return of the eyes to their normal position. Dr. Jackson, however, believed that the apparent movements coincided in time with the jerks; and, at his suggestion, Mr. Bowman had submitted the question to Professor Donders. In his reply, which was read to the meeting, Professor Donders gave an exposition of the law above referred to. The vertigo in the case in question appeared to him to be analogous to that produced by turning rapidly round a few times while in the erect posture; after turning in this manner towards the left, objects appear to continue their movement towards the right, while the eyes tend to deviate slowly towards the left, and then, at short intervals, to return by a rapid jerk towards the right. No movement of objects is observed during the jerks, but there is a corresponding momentary indistinctness. If such movement were observed, it would occur, Professor Donders considered, not as in Dr. Jackson's case, but in the opposite direction to the jerks.

Mr. Brudenell Carter suggested that the apparent movement of the object was due, not to the travelling of the image along the retina, but to the persistence of the retinal impression; thus, during the rapid deviation of the eye to the right, the persistent retinal image would be projected in the same direction, while during the slower return of the eye to its natural position, the impression would disappear.*

Uniocular Diplopia.—Mr. James Adams related the case of a young woman who, after an alleged injury to the head, complained of double vision when using one eye only. On accurate examination no optical or other defect was discoverable in the eye. Believing that, apart from optical causes, uniocular diplopia could not exist, he had at first suspected deception. He now asked the opinion of members as to whether a single retinal image can create a double mental impression.

Dr. W. M. Ord read notes of two cases of uniocular diplopia which had been under his care. The first patient, a lad aged 13, after a hemiplegic convulsion, suffered from convergent strabismus; he had binocular diplopia as a constant symptom for a long time, and double optic neuritis. Uniocular diplopia was first noticed in relation to the left eye; later on, with relation to both; and, towards the termination of the case, there was some fluctuation. *Post mortem*, a large old clot was found in the lateral ventricle; the ventricle was distended, and the relations of the basal ganglia were disturbed. The second patient was a very intelligent Frenchman, aged 28. Following upon a severe fall, a series of epileptic fits occurred; after this it was discovered that there was partial left hemiplegia and hemianæsthesia, with marked paralysis of the left external rectus, paresis of the right external rectus, but no affection of the muscles supplied by the facial nerves. He had double

*This explanation holds good, however, only if we assume the jerks to have been *voluntary* movements. An eye which moves without voluntary impulsion remains, to the consciousness of the patient, motionless; consequently an impression which remains persistent on its retina, represents to him a motionless object. If the movements, in the case in question, were voluntary, the persistence of a retinal impression is the only explanation needed; but if they were involuntary, it explains neither the apparent movements to the right nor the absence of apparent movements to the left. Assuming that the patient correctly represented his impressions, the only explanation which appears to accord with the principles underlying relative movements of eye and image is the one first suggested—viz., that the apparent movements of the object corresponded in time with the return of the eyes to their normal position; and, indeed, it seems natural that they should be perceived more readily during this deliberate portion of the excursion than during the rapid jerks. If this view be the true one, the apparent movements of the object must have been *towards* its normal position, not *away from* it—a distinction which an intelligent patient might be made, perhaps to appreciate and observe.—P.S.

vision with both eyes separately; and when both eyes were open, he saw four images of the object. The vision in the left eye gradually grew less acute until, in about six weeks, it amounted merely to perception of light; while in the right eye a progressive amblyopia was observed, with a high degree of concentric contraction of the field of vision, and some colour-blindness—a condition closely resembling that occurring in "hysterical amblyopia."

Mr. Nettleship read a case contributed by Dr. John Abercrombie, from the practice of Dr. Cheadle, at Great Ormond Street. The patient was a girl, aged 10; she had headache, and slight loss of power on the right side, paralysis of the external rectus, binocular diplopia, and also diplopia when the right eye only was open. The margins of the optic discs were obscured, and the right disc was paler than the left. Twelve days after admission, she became unconscious, had slight convulsive movements of the right arm, and died in a few hours. *Post mortem*, a large abscess was found in the temporo-sphenoidal and occipital lobes on the right side; the lateral ventricles were dilated, and the right communicated with the abscess-cavity; the pia mater at the base was rendered opaque by recent greenish lymph. Dr. Abercrombie pointed out that the abscess must have greatly interfered with the functions of the group of fibres which Gratiolet has described as the cerebral expansions of the optic nerves. He suggested that if, as was now believed, each optic nerve was connected with the cortex of both hemispheres, it was conceivable that, in such a case as this, the right hemisphere might not act in unison with the left. Mr. Nettleship had examined a case, sent to him by Dr. Gowers, in which the diplopia was limited to the lower half of the right field of vision. He had also seen and examined Dr. Ord's cases. In the case of the boy he had at first believed that the double vision was feigned, but now believed it to be genuine, because, with both eyes open, four images were seen. There were but few instances on record; but he thought it worthy of note, that all were cases of cerebral tumour.

The President stated that he had never met with a case in which there was credible evidence of diplopia in one eye alone, apart from those affections of the media which were well known to produce it.

Mr. Brudenell Carter suggested the examination of such cases by means of a double prism, which would double the image on the retina, and thereby, if the case were genuine, create four central impressions. He thought that, where injury was an antecedent, it was very necessary to be extremely

careful in eliminating the possibility of any consequent structural alterations in the lens.

Dr. Knaggs (New South Wales) thought it possible that some difference in the degree of contraction of various parts of the ciliary muscle might lead to differences in density of various parts of the lens, and so to diplopia.

Suppurative Ophthalmitis.—Mr. James Adams read notes of two cases of suppurative inflammation of both eyeballs from embolism, occurring during an attack of endocarditis, following old valvular disease of rheumatic origin. In one case, the two eyes were almost simultaneously affected; in the other, there was an interval of about a week. Both patients passed into a typhoid condition and died. In one case there were numerous other embolic infarctions, in the other none. The chief question he wished to raise was: Why do emboli, under these conditions, lead to suppurative panophthalmitis? Is the result due to the septic nature of the emboli, or is it brought about in a mechanical way? In the first case, a complete examination was made, but no micrococci or bacteria were found; in the second case, no *post mortem* could be obtained.

Tubercular disease of the Iris.—Dr. Brailey and Dr. Walter Edmunds exhibited microscopic specimens from the eye of a child, aged five, excised on account of a condition which resembled suppurative ophthalmitis. No pus was found, but the iris was very extensively infiltrated with tubercle. The tuberculous nature of the mass was recognised by its structure. There was caseous degeneration at and near its posterior surface; in its central part were numerous giant-cells, and also between them many smaller cells in the meshes of a structureless reticulum; while its anterior part consisted entirely of cell-bodies, which stained well. It was inferred that the anterior part, being in the state of most perfect nutrition both as to its contained blood-vessels and the character of its cells, was the earliest stage of tubercle; that the giant-cells and the intercellular recticulum of the middle zone were degenerative changes, which were completed in the posterior zone by the formation of caseous matter.

Perineuritis Optica.. — Dr. Walter Edmunds showed microscopical sections from the optic nerves in a case of fracture of the skull, which proved that much inflammation may occur in the space of 24 hours. A girl, aged eight, was run over by a cab, and received injuries of which she died in 24 hours. *Post mortem* were found rupture of the liver and right kidney and fracture of the middle fossa of the skull, not extending into the orbit or optic foramen, nor into the immediate

neighbourhood of the optic nerves. There was some meningitis. Microscopical examination of the optic nerves showed a dense mass of inflammatory material between the two sheaths, and some inflammation of both sheaths; the nerve itself showed inflammation, which was more marked at the surface than at the centre, as though it had invaded the nerve from the sheath. There was some swelling of the optic disc, but it is doubtful if this was sufficient to have been recognizable with the ophthalmoscope during life. Longitudinal sections of the optic nerve showed that the anterior extremity of the sheath-space terminated in the usual acute angle, proving that the sheath had not been distended to any extent by fluid pressure. The appearances in the two optic nerves were the same. The simplest explanation of the case is that the inflammation of the meninges had spread to the tissue in the intersheath-space by direct continuity.

Tubercle of Cerebellum, with Double Optic Neuritis.—Mr. Sympson (Lincoln) exhibited a cerebellum studded and infiltrated with tubercle, and related particulars of the case. The patient was a child, aged seven, who had suffered from albuminuria after scarlet fever, and had undergone an injury to the head twelve months before admission. He had headache, vomiting, and double optic neuritis; the neuritis gradually passed over into atrophy. At the necropsy, the ventricles contained about half a pint of clear fluid, and the cerebellum was infiltrated with tubercle.

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